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Evaluation of Naringin to prevent the cognitive deficits associated with doxorubicin induced chemo-brain/chemo-fog

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Survival rates for breast cancer have been improved remarkably over the past five decades due to advances in early diagnosis and treatment strategies. Despite this, chemotherapy induced cognitive dysfunction has become a major concern in cancer survivors which is popularly known as chemo-brain/chemo-fog. It is characterized by impaired cognitive battery distressing the day to day activities leading to a negative impact on QOL. No therapeutic interventions are found to be effective till date due to lack of relevant animal models. Study objective is to develop relevant animal model for assessing chemobrain and to evaluate Naringin (NAR), a flavanone glycoside for its neuro-protective potential against Doxorubicin (DOX) induced neurotoxicity and to reverse episodic memory deficits associated with chemobrain induced by DOX. Prior treatment with naringin protected human neuroblastoma (IMR-32) cells against DOX. DOX produced increase in apoptosis, intracellular ROS generation and inhibition of neurite growth in differentiated IMR-32 cells. This was significantly prevented by naringin prior treatment. Flow cytometric analysis revealed that NAR was able to reduce changes in cell cycle produced by DOX. Chemo-brain condition was developed in Wistar rats on administering ten cycles of doxorubicin (2.5 mg/kg, I.P.) as we found that episodic memory was significantly impaired when compared to saline control. Chronic treatment with NAR (50 mg/kg, P.O.) significantly prevented DOX induced episodic memory deficit. Naringin also prevented histo-pathological abnormalities of major organs that were observed with DOX. Naringin may be potential adjuvant therapeutic intervention to alleviate neurocognitive complications associated with DOX chemotherapy in cancer survivors.

Biography

Grandhi Venkata Ramalingayya is currently pursuing his PhD at Manipal University. He has previously worked as Research Associate at *In Vivo* Pharmacology lab, Discovery Research, Suven Life Sciences Ltd., Hyderabad having more than 6 years of experience in Neuroscience, Behavioral Pharmacology and cancer biology fields of research. He has completed his MPharm (Pharmacology) from Manipal University. Currently, he is full time Research Scholar at Department of Pharmacology, Manipal College of Pharmaceutical Sciences, Manipal University and working on Neuro-Oncology research field. He has 3 international and 4 national conference presentations with one publication in peer reviewed journal.

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